Pages 17-20

Evolution of the Vagabond.

How the Unemployed Thousands Enter Trampdom-Full-fledged Hoboes Call Them "Gay Cats"-Many Prefer Not to Beg, But Their Habits Have Become Unsettled-Claim to Be Half a Million Strong.

JOSTAH FLINT.

The Rich Have Their Jags 'n' Why Shouldn't We Workingmen Have

about them by

Studying the "Gay Cats."

This is not the case today. The contemporary "Handwerksbursch" works just as little as he can, and travels in fourth-class cars as far as the rails will carry him. In a few years, unless there is some home influence to bring him back, he generally wanders so far afield that he becomes a victim of "Die Ferne," a thing of romance and poetry to his sturdier ancestors of Luther's time, which for him has become a snare and delusion. German vagabondage is largely recruited from German apprentices. It is the same love of "Die Ferne," the desire to get out into the world and have adventures independent of parental care and guidance, which accounts largely for the presence of so many young men in the ranks of the unemployed in this country. As I have said, they are not tramps or "he-boes," but neither are they victims of trusts, monopolists or capital.

DEVELOP "GAY CATS."



"I ain't Goin' to Work all My Life
'n' Have Nothing But Money at the End of It."

warm to work, he said (it was in June), and he had enough of a "stake" to keep him going for several weeks on the road. He was on his way to the northwest.

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"The west is the only part o' this country and there is the and support such by am not confidence and the support such by an incomplete such by an incomple

been causes
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me extent, of all
sorts of unen. d men, young and
old, but it is ficularly true about
those who have based their thirtyfifth years. I have known them to
tramp and beg for months rather than
accept employment which they considered beneath their training and intelligence.

develop it here a little more rapidly than in any other country which I have explored.

It is furthermore to be remarked concerning the used out-of-works that pride are dillingness to take work outside of trades have also been causes to bankruptcy. The same is true to same extent, of all sorts of unen of men, young and sorts of unen of men, young and the sorts of unen of the sorts of the sorts of unen of u

State of the Matter Forming the Earth's Central Cubic Foot and What Would Happen Were it Brought to the Surface--Heat Far More Intense Than Any That Man Can Produce.

Callin to Be Half a Million Strong.

Common to Half a Million Strong.

Common and them, are out has wheeled a common to the strong of the stro Physical science has undoubtedly attained more than half its total development within the nineteenth century, though it is true that the scientific gains of the century do not include such splendid achievements as the Newton theory of gravitation, the Copernician account of the solar system, or the primary concepts of the atomic hypothesis. The rate of advance in scientific knowledge has been more unisofent in the last hundred years than in the earlier centuries. The discoveries in each field have served an ever before to help on inquiries in adjacent fields, with the result that the explorers have moved forward in touch with one another. Nearly every branch of science has helped and been helped by the others. To this interaction of science has helped and been helped by the others. To this interaction of science has helped and been helped by the others. To this interaction of science has helped and been helped by the others. To this interaction of science has a helped and been helped by the others. To this interaction of science has helped and been helped by the others. To this interaction of science has helped and been helped by the others. To this interaction of science has when the depths of the explorator and the origin thereof. The evidence of a high temperature in the depths of the earth, afforded by the fact that wherever we have access to crystalline roots science has being advance in the solar space of the

down by gravitation. As we know that the earth is solid at least twenty miles downward, and probably is in that state for several times that depth, the idea of a thin crust lying as a layer on a liquid interior was shaken.

The next attack on the notion of internal fluidity areas from the actions.

The next attack on the notion of internal fluidity came from the astronomers. It had long been known that the gravitative attraction of the moon on the equatorial bulging of the earth, or rather, the difference in this pull on the parts of that mass near to and away from our satellite, caused the polar axis to be constantly changing its position. The geological bearing of the movement is found in the fact that if the earth were fluid except for its crust, the position of the polar axis would not be altered by the attraction; but the sphere would change shape in

Geologists' Views Reviewed.

In face of the evidence as to the difficulties of reconciling the great heat of the interior, and the ejections of lavas, with the evidence that shows that it cannot be fluid, geologists of the earth. The phrase "hard as a rock" expresses a high order of rigidity or resistance to strain, when judged by ordinary conditions such as we are accustomed to, yet, when deeply buried and subjected to the vast stresses which are due to the contraction of the mass, from the constant loss of the internal heat, rocks creep in the direction of least pressure, like wax. They twist and fold, as do sheets of wet paper: they behave in a manner that we are not accustomed to associate with solidity.

with solidity.

We may see how inadequate are the

We may see how inadequate are the common views as to the strength of materials by observing what takes place when an armor-piercing shot strikes a thick plate of steel, such as is used to protect the vital parts of a battleship. The shield is made of the most rigid substance that has been contrived. Its resistance is far greater than that of any rock. Yet when struck by the projectile, it yields and is pushed aside as earth by the plowehare. It may spfash, as mud when a pebble is thrown upon it.

The facts above set forth, as well as other considerations which it is not necessary to present, have led those geologists of our time who are concerned with the difficult problems of the earth's interior to look upon that realm in a different way from their prefecessors of a hundred years ago. It is now generally believed that the temperature in the depths, though not as great as it would be if the rate of increase in heat which we observe in mines continued downward to the center, is still hot in a measure not approached in any furnace, or even in the electric arc. That this heat does not resolve the matter into vapor, as it would like materials on the surface, or even bring it to the fluid state, is explained by the action of the pressure to which it is subjected.

Pressure that Would Solidify Air.

Pressure that Would Solidify Air.

We know that pressure tends to con-solidate all substances. Even the rela-tively trifling amount of it that we can solutate an substances. Even the relatively trifling amount of it that we can apply by our arts will liquify air. If we could expose this fluid air to the weight of a hundred miles of overlying rock we may fairly presume that its particles would be so driven together that it would become in a manner solid. It is true that the heat of the depths would tend to keep it from attaining solidity; but we may well believe that the load would be even more effective in bringing it into that state. It seems likely, in a word, that the effect of that internal pressure, due to the weight of the overlying matter, in inducing what we term solidity, is greater than the effect of the heat in bringing matter into the fluid condition.

tion.

We may bring the points above noted into a clear view if we consider what we would find if we could critically examine the cubic foot of matter which lies in the very center of the earth. It is pretty certain that we should find it hotter than anything has been on the surface for some hundred million.

is pretty certain that we should find it hotter than anything has been on the surface for some hundred million years—hotter than anything we see, except it may be the surface of the sun and other fixed stars.

We would doubtless find that the atoms or molecules of the mass were driven nearer together than the like units of surface materials, and that it was more rigid than glass; yet, under the strains such as have flexed and tangled the rocks in mountain folds, this bit of the central earth would move readily, as all the deep parts evidently do under like strains.

If we could complete this imaginary observation by bringing the central bit of the planet to the surface, keeping it during the 4,000 miles of journey, in unchanged conditions of heat and pressure until it was in the air, and then suddenly release its bonds, it would explode after the manner of fired gunpowder.

There is the evident question as to

There is the evident question as to the relation of volcances to the heated interior of the earth. This is still much

(Continued on page 18.)

SKETCHES MADE BY ARTIST GRANT WHILE UNDER FIRE

The accompanying pictures showing incidents in the South African war are from sketches made at the front especially for this paper by Gordon H. Grant. Though, with characteristic modesty, Mr. Grant does not exploit his adventures in anything he has written, he has been under fire several times since he was sent to follow the British army, and his quick eye has selected some very picturesque happen.

selected some very picturesque happenings for portrayal.

The story of Lieutenant Ponsonby of D troop, Thorneycroft's, is a thrilling one. When the lieutenant's section was called upon to retire at Colenso under a heavy fire, he was careful to remain close by a badly wounded comrade and somehow managed to dress his wounds.



Lieutenant Ponsonby and the Boer; His Wounded Companion From His Left Arm) Lord Ponsonby D rew His Revolver and Shot His Boer



BRINGING IN A BATCH OF PRISONERS.



Bringing in the Wounded to Orange River Camp Hospital After the Bat-

SOME BOERS TAKEN PRIJONER AT GRAGOPAN

JETCHED AT GRANGE RIVER CAMP BOER TYPES AS SKETCHED FROM PRISONERS TAKEN AT ORANGE RIVER, BY GORDON H. GRANT.